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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,003	04/12/2004	Kumiko Hirayama	10873.1429US01	4702
53148 7590 02/22/2007 HAMRE, SCHUMANN, MUELLER & LARSON P.C. P.O. BOX 2902-0902 MINNEAPOLIS, MN 55402			EXAMINER KUGEL, TIMOTHY J	
			ART UNIT	PAPER NUMBER
			1712	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/22/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/823,003

Applicant(s)

HIRAYAMA ET AL.

Examiner

Timothy J. Kugel

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 17-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. Claims 1-20 are pending as amended on 3 January 2007. Claims 17-20 are withdrawn from consideration.
2. The text of those sections of Title 35, US Code not included in this action can be found in a prior Office action.

### ***Election/Restrictions***

3. This application contains claims 17-20 drawn to an invention nonelected in the response filed 17 August 2006. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### ***Response to Amendment***

4. Applicant's amendment, filed 3 January 2007, with respect to the correction of a minor informality in claim 1 has been fully considered and are corrective.

The objection to claims 1-16 has been withdrawn.

5. Applicant's filing, on 3 January 2007, of a certified translation of the foreign priority document disqualifies the reference US Patent Application Publication 2005/0005437 (Nakamura hereinafter) as prior art.

The rejection of claims 1-9 and 11-16 under 35 USC 102(e) as being anticipated by Nakamura has been withdrawn.

***Claim Rejections - 35 USC § 102***

6. Claims 1-9 and 11-14 stand rejected under 35 USC 102(b) as being anticipated by US Patent Application Publication 2002/0037397 (Suzuki hereinafter).

Suzuki teaches a circuit board (¶0002) comprising resin board (¶0117 and Figure 10A-10) a compression functional layer (¶0117 and Figure 10A-60) and a polyethylene terephthalate or polyethylene naphthalate film layer (¶0117 and Figure 10A-22) wherein the resin board comprises a glass epoxy prepreg (¶0044, Figure 1A-100) wherein the compression functional layer may comprise the insulating particle layer (¶0083 and Figures 3A-32 and 3B-32) wherein the insulating particle layer comprises insulating particles—including a plurality of aluminum hydroxide particles (¶0061 and Figure 3B-31) added to the adhesive layer (¶0061 and Figure 3B-102') and wherein the adhesive layer comprises a thermosetting resin such as an aramid epoxy or a thermoplastic resin (¶0045 and Figure 1B-102 and ¶0044).

Regarding claim 14, since Suzuki teaches the same composition as claimed, the endothermic temperature of the heat absorbing substance and the softening point of the thermosetting resin impregnated into the insulating material of the Suzuki composition would inherently be the same as claimed.

7. Claims 1-14 stand rejected under 35 USC 102(e) as being anticipated by US Patent 7,045,198 (Nakagiri hereinafter).

Nakagiri teaches a prepreg for producing a circuit board comprising a nonwoven aramid reinforcing material impregnated with a filler-containing resin (Column 1 Lines 36-39, Column 3 Lines 39-53 and Column 5 Lines 30-39) wherein the filler can be aluminum hydroxide (Column 5 Lines 40-47) and the base resin can be a film of polyethylene terephthalate or polyethylene naphthalate (Column 6 Lines 35-40) laminated with a second layer of aramid or polyimide (Column 6 Lines 41-43).

Regarding claim 14, since Nakagiri teaches the same composition as claimed, the endothermic temperature of the heat absorbing substance and the softening point of the thermosetting resin impregnated into the insulating material of the Nakagiri composition would inherently be the same as claimed.

The applied reference has a common assignee and one inventor in common with the instant application. Based upon the earlier effective US filing date of the reference, it constitutes prior art under 35 USC 102(e). This rejection under 35 USC 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 USC 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 15 and 16 are rejected under 35 USC § 103(a) as being unpatentable over Suzuki as applied to claims 1-9 and 11-14 above.

Suzuki teaches a circuit board comprising resin board, a compression functional layer and a polyethylene terephthalate or polyethylene naphthalate film layer wherein the resin board comprises a glass epoxy prepreg wherein the compression functional layer may comprise the insulating particle layer wherein the insulating particle layer comprises insulating particles—including a plurality of aluminum hydroxide particles—added to the adhesive layer and wherein the adhesive layer comprises a thermosetting resin such as an aramid epoxy or a thermoplastic resin as detailed above.

Suzuki does not disclose expressly the heat absorbing substance being present at more than zero mass percent to not more than 60 mass percent with respect to the mold release film or at more than zero mass percent to not more than 95 mass percent with respect to the thermosetting resin.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the amount of insulating particles, for the purpose of resisting the heat generated during manufacturing, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering optimum or workable ranges involves only ordinary skill in the art. See *In re Aller*, 105 USPQ 233.

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9. Claims 15 and 16 are rejected under 35 USC § 103(a) as being unpatentable over Nakagiri as applied to claims 1-14 above.

Nakagiri teaches a prepreg for producing a circuit board comprising a nonwoven aramid reinforcing material impregnated with a filler-containing resin wherein the filler can be aluminum hydroxide and the base resin can be a film of polyethylene terephthalate or polyethylene naphthalate laminated with a second layer of aramid or polyimide as detailed above.

Nakagiri does not disclose expressly the aluminum hydroxide being present at more than zero mass percent to not more than 60 mass percent with respect to the mold release film or at more than zero mass percent to not more than 95 mass percent with respect to the thermosetting resin.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the amount of aluminum hydroxide filler, for the purpose of imparting flame resistance to the circuit board (Column 5 Lines 41-47), since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering optimum or workable ranges involves only ordinary skill in the art. See *In re Aller*, 105 USPQ 233.

### ***Response to Arguments***

10. Applicant's arguments filed 3 January 2007 have been fully considered but they are not persuasive.

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Applicant argues that neither Suzuki nor Nakagiri teach a mold release film that contains or is coated with a heat absorbing substance; however, each teaches a layered circuit board structure comprising the same materials as claimed and they would therefore act in the same manner as claimed.


### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Kugel whose telephone number is (571) 272-1460. The examiner can normally be reached 6:00 AM – 4:30 PM Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJK—Art Unit 1712

  
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